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=> s CoQ10 and mevalonate  
L1 36 COQ10 AND MEVALONATE

=> s l1 and paracoccus  
L2 3 L1 AND PARACOCCLUS

=> d his

(FILE 'HOME' ENTERED AT 14:30:50 ON 31 OCT 2006)

FILE 'MEDLINE, AGRICOLA, DRUGU, JICST-EPLUS, CABA, BIOTECHNO, BIOSIS,  
CAPLUS, LIFESCI, BIOTECHDS, EMBASE, BIOENG, SCISEARCH' ENTERED AT  
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L1 36 S COQ10 AND MEVALONATE  
L2 3 S L1 AND PARACOCCLUS

=> d l2 ibib abs total

L2 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:166835 CAPLUS

DOCUMENT NUMBER: 144:227501

TITLE: Microbial mev operons, transgenic microorganisms  
containing mutant mev operons, and their use in  
production of isoprenoids

INVENTOR(S): Berry, Alan; Manhart, Christian; Simic, Petra

PATENT ASSIGNEE(S): DSM Ip Assets B. V., Neth.  
 SOURCE: PCT Int. Appl., 47 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006018211	A1	20060223	WO 2005-EP8702	20050811
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

PRIORITY APPLN. INFO.: EP 2004-19646 A 20040819  
 AB The present invention relates to a process for the production of isoprenoids, in particular Coenzyme Q10 (CoQ10) by microorganisms. More particularly, the present invention relates to a process for increased production of CoQ10 by microorganisms of the genus Rhodobacter, preferably R. sphaeroides, which have been transformed with one or more gene(s) of the mevalonate (mev) operon from a different microorganism, preferably of the genus Paracoccus, more preferably P. zeaxanthinifaciens, whereby the mev operon is mutated leading to an increased CoQ10 production. Sequences carrying such a mutation as well as a microorganism carrying such a mutated mev operon are also included. Thus, Rhodobacter sphaeroides expressing the mev operon of Paracoccus containing a mutation in the hcs gene for hydroxymethylglutaryl CoA synthase produced significantly more CoQ10 than did an untransformed control.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:58354 CAPLUS  
 DOCUMENT NUMBER: 142:133188  
 TITLE: Improved production of coenzyme q-10 by recombinant Rhodobacter sphaeroides  
 INVENTOR(S): Berry, Alan; Huembelin, Markus; Lopez-Ulibarri, Rual  
 PATENT ASSIGNEE(S): DSM IP Assets B.V., Neth.  
 SOURCE: PCT Int. Appl., 19 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005005650	A1	20050120	WO 2004-EP7025	20040629
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,				

AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,  
SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
SN, TD, TG

EP 1641931 A1 20060405 EP 2004-740419 20040629  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

CN 1820077 A 20060816 CN 2004-80019505 20040629

US 2006154349 A1 20060713 US 2006-563399 20060105

PRIORITY APPLN. INFO.: EP 2003-15367 A 20030708  
WO 2004-EP7025 W 20040629

AB Improved process for the preparation of CoQ10 by fermentation of  
microorganisms of the genus Rhodobacter transformed with the  
mevalonate operon of Paracoccus zeaxanthinifaciens.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 3 OF 3 BIOTECHDS COPYRIGHT 2006 THE THOMSON CORP. on STN

ACCESSION NUMBER: 2005-06240 BIOTECHDS

TITLE: Production of coenzyme Q10 (CoQ10), involves  
introducing the mevalonate operon of  
Paracoccus genus into Rhodobacter and cultivating the  
modified Rhodobacter strain;  
coenzyme production via modified bacterium culture for use  
in food

AUTHOR: BERRY A; HUEMBELIN M; LOPEZ-ULIBARRI R

PATENT ASSIGNEE: DSM IP ASSETS BV

PATENT INFO: WO 2005005650 20 Jan 2005

APPLICATION INFO: WO 2004-EP7025 29 Jun 2004

PRIORITY INFO: EP 2003-15367 8 Jul 2003; EP 2003-15367 8 Jul 2003

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: WPI: 2005-101913 [11]

AN 2005-06240 BIOTECHDS

AB DERWENT ABSTRACT:

NOVELTY - A process (M1) for coenzyme Q10 (CoQ10) production,  
involves introducing a mevalonate operon of a microorganism  
belonging to the genus Paracoccus into a microorganism  
belonging to the genus Rhodobacter, and cultivating the modified  
Rhodobacter strain. The CoQ10 is allowed to accumulate in the  
culture and is then recovered.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for: (1)  
a microorganism (I) of the genus Rhodobacter containing the  
mevalonate operon of a microorganism of the genus  
Paracoccus; (2) use of the mevalonate operon of a  
microorganism of the genus Paracoccus in (M1); and (3)  
increasing CoQ10 production in a microorganism of the genus  
Rhodobacter, involving introducing into a Rhodobacter strain the  
mevalonate operon of a microorganism of the genus  
Paracoccus and cultivating the transformant.

BIOTECHNOLOGY - Preferred Microorganism: The Rhodobacter species  
used in the method is preferably Rhodobacter sphaeroides. The source of  
the mevalonate operon is preferably Paracoccus  
zeaxanthinifaciens.

USE - (M1) is useful for producing coenzyme Q10 (CoQ10)  
(claimed). Coenzyme Q10 is useful, for example, as a nutritional  
supplement.

ADVANTAGE - (M1) is an improved method for producing CoQ10  
, providing a high yield of CoQ10.

EXAMPLE - Rhodobacter sphaeroides strain DSM 158 was used as the  
base host for construction of recombinant strains having improved  
production of coenzyme Q10 (CoQ10). Plasmids pBBR-K-Nde (empty  
plasmid) and pBBR-K-mev-op-up-4, plasmid containing the first 4 genes of  
the mevalonate operon were constructed as described in WO  
02/099095. Transformation of Escherichia coli S17-1 with plasmids for

cloning and subsequent transfer of plasmids from S17-1 to *R. sphaeroides* DSM 158 were performed by conjugation using standard procedures of Nishimura et al., Nucl. Acids Res.18, 6169, 1990; Simon et al., Bio/Technology 1983, 784-91. The transformed strains of *R. sphaeroides* DSM 158 were preserved by adding glycerol and freezing at -80 degrees C. *R. sphaeroides* strains DSM158, DSM 158/pBBR-K-Nde (empty vector control) and DSM 158/pBBR-K-mev-opR114 were grown in shake flask cultures, and CoQ10 production was determined. *R. sphaeroides* strains DSM158, DSM 158/pBBR-K-Nde and DSM 158/pBBR-K-mev-opR114 at 72 hours of culture produced 33.12 (SD 0.23), 29.71 (0.39) and 85.09 (3.42) mg/l of CoQ10, with specific formation (mg CoQ10 produced/mg cell dry mass) 2.04 (SD 0.01), 1.79 (0.10) and 3.80 (0.01), respectively. The results showed that the expression of the cloned mevalonate operon from *P. zeaxanthinifaciens* significantly improved CoQ10 production in *R. sphaeroides*. (19 pages)

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COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

26.32

26.53

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

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